

### **REMARKS**

In the Office Action, claims 1-6, 8-15, 20-25 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Leichter et al. (U.S. Patent Application No. 2004/0086158, hereinafter “Leichter”) in view of Wang et al. (U.S. Patent Application No. 2003/0007598, hereinafter “Wang”). Claims 7, 16, 20 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Leichter in view Wang further in view of Fu et al. (U.S. Patent Application No. 2005/0047544, hereinafter “Fu”). Claims 17-19 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 1-26 remain pending in the present application and are believed to be in condition for allowance. In view of the following remarks, Applicants respectfully request reconsideration and allowance of all pending claims.

### **Examiner’s Response to Arguments**

In the “Response to Amendment” section on page 2 of the current Final Office Action, the Examiner stated that the Applicants’ response filed 12/07/07 was entered and made of record. The Examiner further stated that Applicants’ amendment of claim 12 necessitated new grounds of rejection and the new grounds of rejection.

In the “Response to Arguments” section on page 3 of the current Final Office Action, the Examiner responded to Applicants’ arguments with respect to independent claims 1, 8, 12, 21 and 24 regarding Leichter being completely silent about any kind of coordinate system. The Examiner responded that paragraph [0038], lines 8-9 of Leichter teaches that “the location of the selected region of interest is communicated to a computer processor” and that Leichter’s location of the region of interest reads on the claimed coordinate system.

Further, in the "Response to Arguments" section on page 3 of the current Final Office Action, the Examiner responded to Applicants' argument that Leichter does not teach using the coordinates of the ROI to scan the object with a second imaging system. The Examiner referred to paragraph [0038], lines 8-9 of the Leichter reference and indicated that this passage teaches finding the coordinates of the ROI by finding the location of the ROI. The Examiner further referred to paragraph [0044], lines 5-8 of Wang and suggested that Wang taught using two image systems to scan a ROI.

Applicants respectfully state that based upon the passages cited above and the comments of the Examiner, the Examiner has apparently equated the establishment of a correlation between regions of interest (ROI) identified in separate images independently acquired by separate imaging systems, as appears to be disclosed by the Wang reference, with the presently claimed subject matter. This interpretation by the Examiner is erroneous. Applicants respectfully note that independent claims 1, 8, 12, 21 and 24 generally recite using the coordinates of an ROI, as determined from a first image scanned on a first imaging system, to scan an object with a second imaging system. Wang, *on the contrary*, appears to utilize two images that are separately and independently acquired in determining a correlation between the images. Wang does not appear to teach that coordinates or locations of an ROI in one image are used by a second imaging system to perform a scan, as generally recited in the present claims. If the Examiner believes that either the Leichter or Wang does indeed disclose using coordinates obtained from an image obtained with a first imaging system to perform a scan using a second imaging system, the Applicants respectfully request that the Examiner cite with specificity where such subject matter is disclosed in either reference. At this time, there is no such evidence in the record. Further, after careful review, the Applicants do not believe that either reference discloses this subject matter.

**Rejections Under 35 U.S.C. §103**

The Office Action summarizes that claims 1-6, 8-15, 20-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Leichter in view of Wang. Claims 7, 16 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over Leichter in view Wang further in view of Fu. Claims 1-26 are believed to be patentable as discussed below.

Claim 1 recites a method for viewing an abnormality in different kinds of images. The method includes scanning an object using a *first imaging system to obtain at least a first image of the object*; determining coordinates of a *region of interest (ROI) visible on the first image, wherein the ROI includes the abnormality*; and *using the coordinates of the ROI to scan the object with a second imaging system*.

Claim 8 similarly recites a system for viewing an abnormality in different kinds of images. Again, The system includes an X-ray imaging system configured to scan an object to obtain *at least one X-ray image of the object* and a controller configured to determine coordinates of a *region of interest (ROI) visible on the first image, the ROI including the abnormality*; and *to utilize the coordinates of the ROI to scan the object with an ultrasound imaging system*.

Claim 12, in its currently amended form recites a method for viewing an abnormality in different kinds of images. The method includes determining coordinates of a *region of interest (ROI) visible on an image obtained using a first imaging system, the ROI including the abnormality*; and *utilizing the coordinates of the ROI to scan the object with a second imaging system*.

Claim 21 also recites a method for viewing an abnormality in different kinds of images. The method similarly includes scanning an object using an X-ray imaging system to obtain *at least one X-ray image of the object*; determining coordinates of a *region of interest (ROI) on the X-ray image, wherein the ROI includes the abnormality*; and instructing a probe mover to move a probe to the coordinates to scan a *specific region of the object, wherein the specific region is defined by the coordinates*.

Finally, claim 24 recites a system for viewing an abnormality in different kinds of images. The system similarly includes an X-ray imaging system configured to scan an object to obtain *at least one X-ray image of the object*; and a controller configured to determine coordinates of *a region of interest (ROI) visible on the X-ray image, the ROI including the abnormality*; and to utilize the coordinates of the ROI to scan the object with an ultrasound imaging system.

**Leichter and Wang fail to teach scanning an object using a first imaging system to obtain at least a first image of the object; determining coordinates of a region of interest (ROI) visible on the first image, wherein the ROI includes the abnormality; and using the coordinates of the ROI to scan the object with a second imaging system.**

In the "Claim Rejections" section, on page 4 of the current Office Action, the Examiner stated that Leichter teaches scanning an object using a first imaging system to obtain at least a first image of the object; and determining coordinates of a region of interest (ROI) visible on the first image, wherein the ROI includes the abnormality. The Examiner further suggested that Leichter does not teach using the coordinates of the ROI to scan the object with a second imaging system. The Examiner relied on Wang for the disclosure of the same claim element. The Examiner referred to paragraph [0044], lines 5-8 of Wang and stated that Wang teaches a breast cancer screening system that uses both x-ray mammograms and ultrasound. The Examiner further stated that Wang's system performs a

CAD algorithm that corresponds to the ROI in the x-ray mammogram view with the ultrasound view and thus, Wang reads on the claimed using the coordinates of the ROI in one system for second imaging system. The Examiner goes on to state that it would have been obvious to one skilled in the art at the time the invention was made to combine Leichter' X-ray display system with Wang's second view using an ultrasound viewing system in order to promote volumetric thoroughness of the scan.

With regard to the Examiner's reliance on the Wang reference, the cited passage of Wang reads:

According to another preferred embodiment, a breast cancer screening CAD system is provided that performs a first set of CAD algorithms on a digitized x-ray mammogram view of the breast, performs a second set of CAD algorithms on a corresponding set of adjunctive ultrasound views, correlates regions of interest (ROIs) between the x-ray mammogram view and the adjunctive ultrasound views, and performs joint classification of the ROI using both the x-ray CAD results and the ultrasound CAD results. During the ROI correlation process, ROIs in the x-ray mammogram are matched to corresponding ROIs in the adjunctive ultrasound views in a manner that obviates the need for complex registration computations. Rather, a simplified but statistically reliable lesion-centric correlation process using nipple distance information, or using a combination of nipple distance information and nipple angle information, is used to match corresponding ROIs in the x-ray mammogram view and the adjunctive ultrasound views. In another preferred embodiment, the correlation process also uses lesion size as a factor in matching corresponding regions of interest in the x-ray mammogram view and the adjunctive ultrasound views. In still another preferred embodiment, the correlation process uses lesion distance from the chest wall as a factor in matching corresponding regions of interest in the x-ray mammogram view and the adjunctive ultrasound views. In one preferred embodiment, the joint classification algorithm comprises a direct addition of scalar suspiciousness metrics

taken from the x-ray CAD results and the ultrasound CAD results. (Emphasis added.)

Wang, Paragraph 0044 (emphasis added).

Thus, it is quite clear that what is taught by Wang is a coordinated analysis process by which previously acquired X-ray and ultrasound images are analyzed. There appears to be no indication in the passage relied upon by the Examiner that coordinates or any other information in either the disclosed X-ray or ultrasound images are used to subsequently acquire image data using the other imaging modality.

Further, the Examiner stated on page 4, line 24 to page 5, line 4 of the current Office Action that Wang reads on the claimed use of the coordinates of the ROI to scan the object with a second imaging system. The Examiner referred to paragraph 29, lines 7-9 of Wang and stated that it would have been obvious to one skilled in the art at the time of the invention to combine Leichter's X-Ray display system with Wang's second view using an ultrasound viewing system in order to promote volumetric thoroughness of the scan. The cited passage reads:

The scanning apparatus of the preferred adjunctive ultrasound mammography system is configured to yield ultrasound slices from successive planes in a breast volume substantially parallel to a plane of a predetermined x-ray mammogram view of the breast. The scanning apparatus supports and maintains the breast during the ultrasound scan in a manner that promotes volumetric thoroughness of the scan, with the resulting ultrasound slices extending substantially all the way to the chest wall. The scanning apparatus is capable of partially flattening the breast according to a desired x-ray mammogram view plane while also maintaining patient comfort. Efficient patient throughput is facilitated, while at the same time the risk of inter-patient contamination and fomite propagation is minimized.

Wang, Paragraph 0029 (emphasis added).

All this passage appears to disclose is that the ultrasound system images the breast in planes that are parallel to those used to obtain an X-ray mammogram. The remainder of the passage merely relates to the manner in which the breast is supported and flattened during the ultrasound imaging process. There appears to be no indication that coordinates of an ROI obtained using either the ultrasound or X-ray mammography system are used in the image acquisition processes of the other imaging system. Indeed, all that the passage relied upon by the Examiner appears to indicate is that both the ultrasound and the X-ray mammography system are configured to acquire image data in planes that are parallel to one another. Such an arrangement does not appear to require that any coordinates be exchanged between systems but merely that the breast be positioned similarly with respect to the imaging components in the two imaging modalities.

Thus, Wang does not appear to disclose that coordinates of an ROI, as determined using a first system, are used to scan the object with a second imaging system. Therefore, Wang fails to obviate the deficiencies in the teachings of Leichter. Fu similarly fails to obviate the deficiencies in the teachings of Leichter. Specifically, Fu fails to disclose determining coordinates of a region of interest (ROI) visible on the first image, wherein the ROI includes the abnormality; or using the coordinates of the ROI to scan the object with a second imaging system.

Therefore, any combination of Leichter, Wang and Fu fails to teach or suggest determining coordinates of a region of interest (ROI) visible on the first image, wherein the ROI includes the abnormality; and using the coordinates of the ROI to scan the object with a second imaging system as recited in independent claims 1, 8, 12, 21 and 24. Consequently, the dependent claims are allowable at least by virtue of their dependency from respective allowable base claims. Thus, it is respectfully requested that the rejection of these claims under 35 U.S.C. §103(a) be withdrawn.

**Conclusion**

In view of the remarks set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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